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SOUTHERN RAILROADS AND INDUSTRIAL DEVELOPMENT

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Prior to 1880 the southern states were almost exclusively agricultural communities. The industrial development that has occupied such a prominent place in their economic history since that year has been coincident with railway development.

This has not been a mere accident. It has been the necessary outgrowth of that intimate relation which, in our modern civilization, must exist between production and transportation. The railways of the South that survived the Civil War were generally roads that had been constructed primarily as carriers of cotton to the seaboard and of manufactured products and food supplies to the cotton states. They were scarcely adequate for that service and would have been utterly inadequate for handling the increased volume of traffic brought about by the multiplication of manufacturing establishments, the development of mineral and timber resources, and the growth of industrial communities throughout the South. Conversely, railway development in the South since 1880 would have been much more restricted if it had not been accompanied by an industrial development. Just as the railways of 1880 would have been unable to handle the present volume of southern traffic, so the present railway system of the South could not have been created if it had to depend on a volume of traffic no larger than that of 1880.

The extent of this interdependent growth since 1880 can be shown by some comparative statistics. Between 1880 and 1905 the total volume of the products of manufacture in the states south of the Ohio and Potomac and east of the Mississippi increased from \$287,110,628 to \$1,135,468,795, or 295 per cent. The increase was really considerably greater than is indicated by these figures, for the reason that the census of manufactures of 1905 included only those conducted on the factory system and omitted small estab-

lishments and what are classed by the Census Bureau as "neighborhood industries," which were included in 1880.

This increase in manufacturing has embraced a large variety of industries, but it has naturally been greatest in those industries drawing their raw materials from the South. Thus, in 1880 there were only 561,360 cotton spindles in the South, and in 1908 there were 10,200,903, an increase of 1,717 per cent. In 1880 southern cotton mills used only 188,748 bales of cotton and in 1908 they used 2,187,096 bales, an increase of 1,058 per cent. From practically nothing in 1880, the cotton-seed crushing industry of the South has grown until, in 1907, it crushed 3,843,981 tons of seed, producing 175,724,840 gallons of oil and 1,785,804 tons of cake and meal. Pig-iron production in the southeastern states increased from 335,864 tons in 1880 to 3,033,388 tons in 1907, or 803 per cent. Coke production increased from 372,436 tons to 9,289,471 tons, or 2,394 per cent. Coal production increased from 3,793,308 tons to 84,978,700 tons, or 2,140 per cent, and the lumber cut increased from 2,652,015,000 feet to 11,899,984,000 feet, or 348 per cent.

While this great industrial advance has taken place southern agriculture has not stood still. Leaving out of account the enormous increase in agricultural production in the newly-settled regions west of the Mississippi River, in the states east of that stream cotton production increased from 3,816,250 bales in 1880 to 7,444,805 bales in 1908, or ninety-five per cent, and corn production increased from 331,105,000 bushels in 1880 to 452,324,000 bushels in 1908, or forty-six per cent. This same period has witnessed a large increase in the production of fruits and vegetables in the southern states, both for northern markets and for local use.

Both southern agriculture and southern manufacturing have had their greatest development in the production of commodities in demand in other parts of the United States and in other countries. Such development is possible only when means exist for carrying products which cannot be consumed locally to markets where they are in demand. Therefore, as an inevitable consequence of the very large industrial development and the considerable increase in agricultural production, the railways of the South have been called upon to transport a rapidly increasing volume of traffic. In 1880, according to Poor's Manual, there were 14,817 miles of railway in the states south of the Ohio and Potomac and east of the Missis-

issippi. In 1890 there were in this territory 24,535 miles, and in 1907, 39,068 miles, showing an increase of 164 per cent over 1880 and fifty-nine per cent over 1890. In 1890 there were less than thirty miles of double-track railway line in all this territory. In 1907 there were 1,321 miles of double track, and the total mileage of operated tracks, including single tracks, second tracks, yard tracks, sidings and spurs, increased from 27,830 miles in 1890 to 50,533 miles in 1907. The number of locomotives increased from 3,310 in 1890 to 7,400 in 1907, or 123 per cent, and the number of cars of all classes in service increased from 109,669 to 293,230, or 167 per cent. This increase in the number of locomotives and cars has been accompanied by a very considerable increase in the average tractive power of locomotives and in the average carrying capacity of freight cars.

Southern agricultural and industrial growth will continue largely along the line of the greatest development in the past—that of producing commodities in demand in other regions. Cotton has not only been the most important agricultural product of the South, but it is the foundation of two great and growing southern manufacturing industries—the cotton textile industry and the cotton seed crushing industry. The limit of cotton production has not nearly been reached even in the older cotton states east of the Mississippi. As the world demand for cotton textiles and cotton seed products increases the South will meet it with a larger production due not only to bringing additional land under cultivation but also to an increased average yield per acre, brought about by more intensive farming and scientific crop rotation. The cotton mills of other lands and of other sections of the United States will continue to draw on the southern crop, but, as a result of the economic force tending to draw the industry to proximity to its source of raw material, we may expect the multiplication of spindles and looms to proceed more rapidly in the cotton growing states than elsewhere. The rate at which the cotton mill is being drawn to the cotton field is shown by the fact that, while in 1880 the consumption of the mills in the cotton states equaled only 3.28 per cent of the crop of 5,755,359 bales grown in that year, in 1908 it equaled 15.62 per cent of the crop of 13,697,310 bales grown in that year. Cotton seed crushing will continue to be distinctively a southern industry and its growth will keep pace with the growth of cotton production.

What will be true of the cotton textile and cotton seed industries will be true, to a greater or less degree, of other industries based on the conversion of southern raw materials into finished commodities. The South has no monopoly of iron ore such as it has of cotton, but southern iron and steel can profitably be put into competitive markets and are furnishing raw materials for an increasing number of southern industries in which iron and steel, either by themselves or in combination with wood and other metals, are manufactured into finished commodities. Neither has the South a monopoly of timber, but the wasteful cutting of the timber of other sections and the advancing price of forest products are making the woodlands of the South constantly more valuable and drawing woodworking establishments of all kinds to that section. Furniture manufacturing, the making of spokes and handles, the building of wagons and other vehicles, the manufacture of sash, doors, and blinds, of mantels and other interior woodwork are already extensive and well-established southern industries, and will continue to grow as will also the conversion of southern woods into pulp and paper. Among other industries destined to continued growth in this region of vast and varied resources may be mentioned the tanning of native and imported hides and the conversion of leather into finished products, the manufacture of glass, of pottery, and of building bricks and fire bricks, the mining of coal and the quarrying and dressing of marble, granite, and other building stones.

Bearing in mind the fact that this industrial advance will be accompanied by increased agricultural production, including a constant increase of the growing of fruits and vegetables to supply the growing demand of northern markets, it is apparent that it must be accompanied by a corresponding development of southern transportation facilities. As profitable production depends on ability to market those products not consumed locally in places where they are in demand, and as southern transportation facilities, by water and by land, are not now materially in excess of the immediate demand for transportation service, more facilities are essential to continued agricultural and industrial growth. Wherever they can be made of practical value waterways should be improved, but, in the main, the South must rely on railways as highways to market, and additional railway facilities are as necessary to unobstructed industrial development as are additional factories.

If it is to be of the greatest practical value railway development in the South in the immediate future must be intelligently planned and systematically carried out. While conditions vary in different localities, taking the South as a whole, the immediate problem confronting the managers of southern railways is the movement of an increasing volume of traffic along already established commercial highways. Therefore, while there may be need for new construction in some localities to meet special conditions, the most pressing general need at this time is the provision of increased facilities for moving traffic on the lines already built and in operation.

Tracks, motive power, and cars are the three indispensable requisites for transportation by rail. Of almost equal importance in railway operation are block signals, adequate platforms and warehouses for the handling and storage of freight, and reasonably commodious and comfortable passenger stations. Monumental passenger stations and other purely ornamental improvements may be desirable from an artistic viewpoint, but they are not essential for the performance of transportation service. Looking into the future and taking account of the natural resources of the South, we can see no reason why the industrial development of that section should not continue for years to come at a rate at least as rapid as that of the period since 1880. If this reasonable expectation is to be realized it will mean a growth in traffic far in excess of the present carrying capacity of the railways of the South, and will call for the concentration of railway resources very largely on the provision of those improvements which will increase carrying capacity.

Of the three primary elements of a railway—tracks, motive power, and cars—each is useless without the other. If a railway is to perform the most efficient service it must possess each of these elements in such ratio to the other two as to obtain the maximum of efficient service from all. In the present stage of railway development in the South, considering the lines of that section as a whole, the most urgent immediate need is for additional tracks and track improvement. Double tracks, passing tracks, side tracks at way stations, adequate and properly arranged trackage at terminals and the improvement of tracks by the reduction of grades and the elimination of curvature all contribute to the efficient operation of the system as a whole. They are equivalent, on a line with heavy traffic, to increases in motive power and cars. A given locomotive

can haul a much heavier load on a straight and level track than on one with sharp curves and heavy grades. Every reduction in grades and curvature is, therefore, equivalent to an increase in the efficiency of motive power. Double tracks on congested parts of the line, passing tracks, and sufficient and conveniently arranged tracks at terminals facilitate the movement of trains over the entire system and reduce the time that must elapse between the loading of a car at a shipping point and its unloading at destination. Such improvements are, therefore, equivalent to increases both in the motive power and car supply of the system making them, and expenditures for their provision benefit all the territory and all the interests served by the railway. In a region of rapidly increasing traffic, such as the South, they are of especial importance.

The interdependence of the railways and of the communities served by them has been fully recognized by the railway managers of the South, and each system operating in that section is endeavoring to build up its particular territory. The railways have been persistent advertisers of the South—of its manifold resources and its abundant opportunities. They have sought to locate farmers, miners, quarrymen, lumbermen, and manufacturers along their lines, and no inconsiderable part of the agricultural and industrial advance of the South is directly traceable to the work of southern railways along this line. As proof that they have not overstated the advantages and opportunities of their section they can point not only to the successful enterprises undertaken and managed by southern men, but also to the numerous instances in which men from other parts of the United States and from foreign countries have gone South and have achieved conspicuous success.

Great as has been the progress of southern industrial growth in the past, it may be said without exaggeration that only a fair start has been made in the development of the industrial possibilities of that section. Its advantages of soil and climate and its wealth of natural resources are daily becoming more widely known. Its future is assured, and its railways will continue to be important and helpful factors in its industrial development.